May 13, "The Optical Properties of Crystals, and some of their Practical Applications," by Prof. W. G. Adams, F.R.S. The course of Cantor Lectures, which will be delivered during the same period, will be the third for the present session. It will consist of six lectures by Mr. R. W. Edis, F.S.A., on "Art Decoration and Furniture," to be given on the following dates :— April 5, 12, 19, 26; May 3, 10.

In a report which he has addressed to the Department of Finance and Commerce at Calcutta, Mr. E. Colborne Baber, lately H.M.'s Consular representative at Chungking, furnishes some very interesting information respecting the western frontier of China, to one part of which, however, we can only allude. During his travels in the mountainous region west of Kiating-fu, in Szechuen, Mr. Baber discovered two kinds of tea of a very unexpected nature. In the monasteries on Mount Omi (or Ngomi) he was given an infusion of tea which is naturally sweet, tasting like coarse congou with a plentiful addition of brown sugar. It is only grown by the monks on the slopes of the mountain, and two days' further west its existence was unknown. The other variety, odd as it may appear, has a natural flavour of milk, or perhaps more exactly of butter. What is most interesting is the fact that it is wild tea, growing in its native elevated *habitat* without cultivation, and an unimpeachable instance of a wild tea-plant has, Mr. Baber affirms, never yet been adduced in China. This wild tea is found in the uninhabited wilderness west of Kiating and south of Yachow, at heights of 6,000 feet and upwards, and was described to Mr. Baber as a leafy shrub 15 feet high, with a stem some 4 inches thick. Every part of the plant, except the root, is used for making the infusion; the wood is chopped up and put into a kettle of water with the dried leaves and twigs, and being boiled yields a strongly coloured but weak tea, possessing a buttery flavour, which gives it some resemblance to the Thibetan preparation. Mr. Baber only found it in the Hwang-mu-chang plateau, a terrace perched among the stupendous gorges of the Tung river.

The letter on the "Tay Bridge Storm," which appeared in Nature, vol. xxi. p. 443, was written by the Hon. Ralph Abercromby, and not by Sir Ralph Abercromby, Bart., as erroneously stated.

The additions to the Zoological Society's Gardens during the past week include a Grivet Monkey (*Cercopithecus griseo-viridis*) from North-East Africa, presented by Mr. W. C. Gordon; a Sykes's Monkey (*Cercopithecus albogularis*) from East Africa, presented by Mr. E. S. Savage; a Malbrouck Monkey (*Cercopithecus cynosurus*) from West Africa, presented by Mrs. Ladell; two Spanish Ichneumons (*Herpestes widdringtoni*) from Andalusia, presented by Mr. J. C. Forster; a Caffer Wild Cat (*Felis caffra*) from South Africa, presented by the Rev. G. H. R. Fisk, C.M.Z.S.; three Impeyan Pheasants (*Lophophorus impeyanus*) from the Himalayas, a Square-spotted Snake (*Oxyrrhopus doliatus*) from South America, deposited; four Concave-casqued Hornbills (*Buceros bicornis*) from India, a Brazilian Cariama (*Cariama cristata*) from Brazil, two White-backed Trumpeters (*Psophia leucoptera*) from the Amazons, a Redshank (*Totanus caladris*), British, purchased; two Common Badgers (*Meles taxus*), born in the Gardens.

OUR ASTRONOMICAL COLUMN

Suspected Variable Stars.—Mr. Tebbutt, of Windsor, N.S.W., has drawn attention to the variability of the star B.A.C. 2472, which he appears to infer from its occurrence as a sixth magnitude in the occultation list of the *Nautical Almanac*, and his ineffectual attempt to observe its occultation on April 22, 1874, added to the circumstance of its present brightness not exceeding the eighth magnitude. But it seems probable that the supposed variability arises from an oversight of Taylor's in his observations either in 1834 or 1835. In vol. iii. of the Madras Observations it is certainly rated 6m., and Baily has followed Taylor in the British Association Catalogue, whence the *Nautical Almanac* estimate of magnitude was no doubt taken. Lalande, who observed the star twice, rated it 8 and 8½, D'Agelet, Piazzi, Bessel, and Argelander in the *Durchmusterung*, 8·0; so that observers, with the exception of Taylor, agree, and as he did not observe the star closely preceding on the parallel 65 Geminorum in 1834 or 1835, we may suspect that the magnitude of this star was inadvertently attributed to B.A.C. 2472, though his position undoubtedly refers to the latter star. Mr. Tebbutt also mentions that he has reason to think the neighbouring star, Lalande 14571, is variable; in this case there are not published data to guide us: it is 8½ in the "Histoire Céleste," 8 and 8·9 in Bessel, and 8·1 in the *Durchmusterung*.

The Southern Comet.—Mr. Gill, in a letter dated—Royal Observatory, Cape of Good Hope, February 24, incloses an approximate orbit of the great southern comet, calculated by Mr. Finlay, the first assistant. The elements are as follows :—

Perihelion passage, January 27·55 G.M.T.

Longitude of perihelion	280 16
,, ascending node	123 24·5
Inclination	75 12
Logarithm of perihelion distance	7·90315

Motion—direct.

It will be remarked that this orbit is entirely different to that we published last week, which was deduced from the only positions available for the purpose—the very rough ones forwarded by Mr. Gill on February 17. From the same approximate data an orbit was also calculated at Lord Lindsay's observatory, with results almost identical with those in Nature, but which were received too late for insertion last week. It is to be presumed that Mr. Finlay will have availed himself of the accurate places which were obtained at the Cape on February 11, 13, and 15, but so far as we know have not yet been transmitted to Europe; hence it may be anticipated that his elements will prove to be the true ones, and we shall have, in the case of this comet, a similar one to that of the comet of 1533, for which two orbits by Douwes and Olbers, bearing no resemblance, appear in our catalogues, having been deduced from rough observations extending over a limited period. We have already had occasion to point out in this column that the comet of 1686 presents a similar difficulty if only the European observations are employed, but the correct orbit is assigned when we introduce in the computations the positions observed at Amboyna and in Siam.

Calculating from Mr. Finlay's elements, we have the following places of the comet for 8h. Greenwich M.T.

	R.A. h. m.	N.P.D. ° ′	Log. distance from Earth.	Log. distance from Sun.
March 27	5 7·9	96 20	0·2347	0·2237
28	5 10·1	96 3		
29	5 12·2	95 47	0·2492	0·2334
30	5 14·3	95 31		
31	5 16·4	95 16	0·2633	0·2427
April 1	5 18·4	95 1		
2	5 20·4	94 47	0·2769	0·2516

It is right to state, that from the greatly diminished intensity of light which the comet is likely to present at this time, Mr. Finlay doubted if it would be possible to observe it in Europe, and Mr. Gill adds that in strong moonlight on February 23 he failed to discover the least trace of it, and was not sanguine with his optical means that he would see it again. Nevertheless as instruments of much greater capability can be brought to bear upon a search for the comet in these latitudes, the above places may be found of service.

We are indebted to correspondents in Australia, Tasmania, and South America for various notices of this fine comet, chiefly extracted from the public journals. The *Launceston Examiner* of February 3 states that attention had been called the previous evening to what appeared to be the tail of a very large comet, which "extended from thirty to forty degrees above the horizon, and was setting almost in a line with the sun, which prevented the nucleus and brighter part of the tail being seen earlier;" it is added, "if it were now winter instead of summer it would present a glorious spectacle about dark." At Melbourne the tail was seen on February 2 soon after sunset, but the nucleus had not been visible at the Observatory up to February 5; no doubt Mr. Ellery will give a good account of it later, and should nothing prevent the great reflector from being brought to bear

upon the comet, observations of much value may be received from Melbourne.

Mr. E. A. Fry, writing from Birmingham, incloses an extract from the *Anglo-Brazilian Times* of February 24, wherein M. Liais publishes the rough approximation to the elements, which the Emperor of Brazil telegraphed to the Academy of Sciences at Paris. M. Liais states that he had combined the two directions observed at Rio on the 4th and 8th inst. with the information in relation to the appearances observed at other places to arrive at some indication of the nature of the orbit, and with such meagre data it is not surprising that his figures should differ so greatly from Mr. Finlay's. He suggests that the object which several American astronomers mention having remarked during the totality of the solar eclipse of January 11 in California, which was "distinct from the fixed stars and planets," and conjectured to be an intra-Mercurial body, "may have been this comet:" not a very happy suggestion if we are to rely upon Mr. Finlay's elements, since at the time in question the comet would have been situated 22° west and 23° south of the sun.

Other notices received describe the brilliant appearance of the tail in the first week of February, but supply no particulars with reference to the position of the nucleus.

METEOROLOGICAL NOTES

THE storm of December 28, 1879, will long stand out among British storms, not only as having occasioned the fall of the Tay Bridge, but also as having presented peculiarities which, taken together, are, so far as observation goes, unprecedented in these islands. Some of the more important of these peculiarities were brought before the meeting of the Scottish Meteorological Society on March 10 by Mr. Buchan. Of these the most remarkable were the barometrical fluctuations, which were quite extraordinary along the central path of the storm from Barra Head to Wick. The barometric readings at Dhu Heartach Lighthouse, twelve miles south-west of Iona, reduced to 32° and sea-level, were, in inches, 29·615 at 10 A.M., 29·405 at noon, 29·205 at 1·30 P.M., 28·905 at 4 P.M., 28·705 at 5·5 P.M., 28·645 at 6 P.M., 29·105 at 7 P.M., and 29·342 at 9 P.M. Thus in one hour, from 6 to 7 P.M., the barometer rose 0·460 inch, or nearly half an inch. That this extraordinary fluctuation was no isolated phenomenon is shown by what was noted at the other lighthouses in the vicinity. Thus the barometer rose, from 4 to 9 P.M., 0·790 inch at Barra Head, from 5 to 9 P.M., 0·681 inch at Monach, 0·760 inch at Ushenish, and 0·660 at Skerryvore; from 5.30 to 9 P.M., 0·700 inch at the Point of Ardnamurchan; and from 6.15 to 9 P.M., 0·590 inch at Kyleakin. To north and south of the central path of the storm the fluctuations, though unusually large, fell far short of these amounts. From the observations made at the numerous stations of the Society, including the sixty Scottish lighthouses, the position of the centre of the storm could be determined with a close approximation to exactness hour by hour. From the results it is shown that the cyclone travelled onwards in each of the five hours respectively from 4 to 9 P.M., 30, 45, 53, 70, and 70 statute miles, the rate of progress from 7 to 9 P.M. being thus about 3½ times the average rate in this part of Europe. The behaviour of the temperature of the air was equally striking, rising everywhere to from 52° to 57° as the centre of the cyclone advanced, and falling after it had passed. In other words, the temperature rose on this occasion to the average of the first week of June. From data supplied by Mr. Scott, of the Meteorological Office, the maximum velocity of the wind during the heaviest gusts was at the rate of 96 miles an hour at Aberdeen, 120 miles at Glasgow, and probably 150 miles at Seaham. Had pressure anemometers been pretty generally in action over Scotland on that evening, much higher wind-forces than these would doubtless have been recorded. The force of the wind was comparatively little felt to the north of the central path of the cyclone, owing to the low gradients in that direction, no notice of a storm being recorded, for example, at Cape Wrath, Stourhead, or the Butt of Lewis; but in the path of the centre and for some distance to southward, the storm swept onwards with destructive and uncontrolled fury, raising the spray in what seemed solid masses of water against the lantern of the Dhu Heartach Lighthouse, 145 feet high, which struck the glass with a sound like that of road metal, and completely overturning whole forests of Scotch firs 200 years old, so that not a single tree was left standing, and where the trees were fast rooted in the rock prostrating them along the ground after forming a joint near the roots by splintering this part of their trunks to a bundle of matches. The steepest gradient afforded by the barometric observations which were made is about 1 inch to 110 miles. Steeper gradients were noted during the great Edinburgh hurricane of January 24, 1868, when a gradient of 1 inch to 72 miles occurred, and in accordance therewith an amount of damage was done to structures of solid masonry of which the storm of December last affords no parallel

MR. CHARLES CARPMAEL, who has recently been appointed Superintendent of the Meteorological Service of the Dominion of Canada, has issued the first number of a *Monthly Weather Review*, presenting with fairly satisfactory fulness the weather and other meteorological phenomena of the Dominion for January, 1880. The storms which in any way affected Canada during the month are detailed, and their tracks indicated. Weather-probabilities are issued by the office in Toronto at 10. AM. daily, and posted up at 350 places in Canada within an hour from the date of issue. From an analysis of the successes and non-successes of the weather-probabilities of the month given in the *Review*, it would appear that 80½ per cent. were fully verified, 93½ per cent. either fully or partly verified, leaving only 6½ per cent. of failures. The outstanding features of the meteorology of the month were the low mean pressure in the west, the high pressure in the east, and the very high temperature which prevailed at all the stations. The mean temperature for January, 1880, was the highest yet recorded in any year at Toronto, thus offering a striking contrast to the weather which prevailed generally over Europe during the month. This meteorological service is under the deepest obligations to Prof. Kingston, through whose exertions chiefly it was called into existence. These arduous exertions have told seriously on his health, and he has been obliged to retire from the position of superintendent. He carries with him the best wishes of meteorologists coupled with a hope that in his retirement he will be able to continue his services in the furtherance of American meteorology.

IN a twelfth contribution to meteorology, Prof. Loomis presents us with isobars for the United States, showing for January and July the mean pressure of the atmosphere from the observations made by the Signal Service of the War Department for the six years ending June, 1877. In July pressure is highest in Florida, being 30 100 inches, from which it diminishes on advancing into the interior to 29·850 inches in Utah, rising again on proceeding west to about 30·100 inches on the Pacific coast, in latitude 45°. This state of things is, roughly speaking, reversed in January, with, however, several noteworthy differences. The highest pressure, 30·250 inches, is now in Utah, and the lowest generally round the coasts, falling to the minimum, 30·000 inches, at the entrance to Fundy Bay. The high pressure of the interior may be regarded as spreading over the States occupying the region from Minnesota to California. The slight break in it on the chart, as occurring about Cheyenne, will require confirmation from future observations. A second area of high pressure spreads over the larger portion of the south-eastern and Southern States. These two distinct areas of high pressure are separated from each other by a region of lower pressure stretching in a south-west direction from Chicago, towards the Rocky Mountains. The discovery of this peculiarity in the winter-distribution of pressure in the States which, correctly we think, is ascribed to the path usually taken by the barometric minima of American storms in the earlier part of their course, constitutes, perhaps, the most valuable contribution to meteorology yet made by Prof. Loomis.

PROF. LOOMIS institutes an interesting comparison of the varying rates of progress of storm-centres, and shows that over the United States the rate of progress is twenty-six miles an hour, whereas, over the Atlantic, it is only fourteen miles, and on the continent of Europe, as shown by Dr. Neumayer, it does not exceed sixteen miles an hour. In this connection it is pointed out that the winds on the Atlantic are stronger than they are over either of the continents, and the winds of central Europe are stronger than the winds of the United States, relations that suggest whether friction may not be concerned in determining the rate of the onward progress of storms. As bearing, however, more immediately on this question, Prof. Loomis draws attention to this important distinction between American and European storms, viz., from the Rocky Mountains to the Atlantic Ocean storms advance from a drier to a more humid atmosphere, whereas in Europe, while storms pursue their easterly course, they proceed from a humid to a drier atmo-